UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2002/01504

April 2, 2003

Mr. Fred Patron
U.S. Department of Transportation
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Effects of a Bridge Replacement Project on Chehalem Creek, Tributary to the Willamette River, Yamhill County, Oregon.

Dear Mr. Patron:

Enclosed is a biological opinion (Opinion) pursuant to section 7 of the Endangered Species Act (ESA) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries), on the effects of the proposed Bridge Replacement Project in Yamhill County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and UWR steelhead (*O. mykiss*). As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Tom Loynes of my staff in the Oregon Habitat Branch at 503.231.6892.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

cc: Molly Cary - ODOT
Bill Warnecke - ODOT
Randy Reeve - ODFW
Brian Bauman - ODOT
Nick Testa - ODOT

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Chehalem Creek Bridge Replacement Project
Oregon Highway 240 - MP 9.66
Yamhill County, Oregon

Agency:	Federal Highway Administration
Consultation Conducted By:	National Marine Fisheries Service, Northwest Region
Date Issued:	April 2, 2003

for Michael R Crouse

Issued by: _____
D. Robert Lohn
Regional Administrator

Refer to: OSB2002-0330-FEC

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1. ENDANGERED SPECIES ACT

1.1 Background

On December 31 2002, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for the Chehalem Creek Bridge Replacement Project. Chehalem Creek is a tributary of the Willamette River in Yamhill County. The project site is on Highway 240 near mile post 9.66. The proposed action is the removal and replacement of an existing bridge spanning Chehalem Creek. The project applicant, the Oregon Department of Transportation (ODOT), proposes to replace a deteriorating multi-span bridge with a fully spanning bridge. FHWA funds would partially finance this project and constitute the Federal nexus. ODOT is responsible for the project design and management.

The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996). FHWA determined that the proposed action was likely to adversely affect UWR steelhead. The UWR steelhead was listed as threatened under the ESA on March 25, 1999 (64 FR 14517). The project site is also within the range of UWR spring chinook salmon, which were listed as threatened under the ESA on March 24, 1999 (64 FR 14517).

This biological opinion (Opinion) is based on the information presented in the biological assessment (BA), site visits, meetings with ODOT biologists and consultants, and the result of the consultation process. The consultation process involved correspondence and communications to obtain additional information and clarify information in the BA. As a result, a BA was produced that tiered off of the SLOPES Opinion. The bank stabilization portion of this project and the two week extension to the in-water work period are the only actions that would not fit under SLOPES. The BA includes conservation measures and BMP's that would cover effects matching the SLOPES terms and conditions.

The objective of this Opinion is to determine whether the action to replace the Chehalem Creek bridge is likely to jeopardize the continued existence of the UWR chinook salmon or UWR steelhead.

1.2 Proposed Actions

The project site is located at mile point 9.66 on the Yamhill-Newberg Highway (Highway 240) in Yamhill County. The bridge is located approximately 3.2 kilometers (km) northwest of the City of Newberg and spans Chehalem Creek at approximately river kilometer 7.2. Chehalem Creek enters the Willamette River just south of the City of Newberg.

The purpose of the proposed action is to improve roadway elements within the project area to protect vehicular traffic along Highway 240. The Chehalem Creek Bridge has been assessed as being both structurally and functionally obsolete for the vehicular traffic it carries.

The action area for the proposed project, extends approximately 15 meters (m) upstream of Chehalem Creek Bridge and 45 m downstream to the bottom of the project.

Bridge Construction

The existing Chehalem Creek Bridge is a two-lane, 8.9-m wide, 23.2-m long, four-span timber trestle bridge with timber decking and asphalt-concrete wearing surface. The creosote-treated wood piles are supported on partially buried concrete or rock footings. Portions of the streambank and channel under the existing bridge have been armored with rock. The bridge is approximately 2.4 m above Chehalem Creek.

The proposed replacement bridge is a 12.2-m wide, 23.5-m long, single-span bridge comprised of 10 precast prestressed (PCPS) concrete slabs and an asphalt-concrete surface. The longer span was designed to ensure proper embedment and to reduce the risk of scour at the bridge abutments. The proposed structure will have the same alignment as the original structure. To accommodate the single span, it will be necessary to raise the grade of the roadway a minimum of 0.3 m to maintain the required freeboard. The proposed bridge will be supported by two end bents consisting of seven steel pipe piles. The estimated pipe pile lengths are 6 m for the west abutment and 5.5 m for the east abutment.

The proposed bridge will consist of two 3.6-m traffic lanes with two 2.1-m shoulders, for a total roadway width of 11.4 m. Standard 41 centimeter (cm) wide rails will be placed on each side of the structure resulting in a total structure width of 12.2 m.

Construction and staging activities will take place from the existing roadway, with equipment and materials staged at least 45 m from the creek. Because the highway will be closed during construction, excavated materials and construction equipment can be stored along the existing road network, without clearing vegetation or compacting/contaminating soils.

Bridge Removal

The existing bridge will be removed to construct the proposed bridge on the existing alignment. ODOT anticipates that all bridge removal activities can be performed from the existing roadway above the ordinary high water (OHW) elevation. The bridge rails, asphalt-concrete wearing surface, and the timber decking will be removed from the structure using containment measures and in a manner that prevents debris from entering the stream. The existing creosote-treated wood piles rest on concrete footings that are partially buried in the channel and bank substrate. The creosote-treated wood piles are only in contact with the stream during periods of flooding. The concrete footings are buried to an estimated depth of approximately 1 m. The concrete footings will be isolated from the water prior to being removed. Isolation of the in-water work area will be conducted via a gravity-fed diversion system to allow for downstream fish passage if there is any flow at the time of construction. If needed, the diversion pipe can be moved from

either side of the channel, depending on the access required. The creosote-treated wood timbers will also be removed.

The contractor will prepare a Bridge Removal Plan (BRP) that gives complete and detailed plans for removing the existing bridge. The BRP shall be submitted to ODOT prior to construction for approval. The BRP will outline specific containment measures necessary to keep all bridge removal and construction debris out of the channel during the life of the contract. A diagram will be prepared to show the method and sequence of construction and removal and submitted as part of the BRP.

Riprap Installation

Following removal of the concrete footings, the channel under the bridge will be excavated and graded for placement of the riprap and toe trench. These activities will be conducted within the same isolated work area for the bridge removal activities. The riprap toe trench will extend approximately 2 m into the channel from both banks.

Following riprap placement, the excavated native channel material will be used as a top dressing over the riprap toe trench. This top dressing will provide a more natural substrate for ecological functions. Riprap used to armor the streambank upstream and downstream of the bridge will be covered with soil and will be planted with willow (*Salix spp.*) stakes and a native grass seed mix. The plantings will stabilize the soil and provide riparian shading and nutrient inputs to the creek.

The proposed design will maintain and slightly improve vegetation within the project area. The channel bed and banks currently show significant scour and degradation within the action area. The channel is incised by approximately 1 to 2 m and the resulting bank instability has widened the channel. The banks are poorly vegetated and unstable. The stream channel under the bridge will be lined with approximately 180 m^3 of metric class 100 riprap and approximately 180 m^3 of metric class 1000 riprap to provide scour protection for the channel and proposed bridge abutments. The riprap will extend 1 m up and downstream from the bridge on the east bank and 2 m up and downstream from the bridge on the west bank. The majority of this material will be placed below the OHW elevation.

ODOT evaluated other potential bank stabilization techniques before designing the riprap armament. These alternative methods include biostabilization using live vegetation, biostabilization using large wood, and flow diversion structures such as barbs. Biostabilization techniques using live vegetation were excluded because the low bridge deck prohibits the establishment of vegetation. There is currently no vegetation under the bridge. Biostabilization techniques using large wood were excluded because of the confined hydraulic opening (water currently reaches the bridge deck at high flows) and because if the wood were to become dislodged or not properly function, then maintenance access would be severely difficult in the confined area. Barbs and other flow diversion structures were excluded because of the complex scour issues (both pressure flow and hydraulic scour) that are not remedied by diverting flows. Because of the narrow hydraulic opening, difficult maintenance access, and complex pressure

and hydraulic scour concerns, ODOT has determined that riprap protection is the best way to ensure the safety and stability of the proposed structure.

New Impervious Surface and Stormwater Treatment

Roadway and bridge widening are required to facilitate the raised grade of the proposed bridge and the safety upgrades to the approach guardrails and lane widths. The increased roadway width and taper from the bridge will result in an increase in impervious surface of 756 m^2. The proposed bridge will constitute approximately 287 m^2 of impervious surface, an increase of approximately 99 m^2.

Stormwater runoff associated with the roadway currently sheet-flows off into vegetated ditches prior to entering the riparian area adjacent to Chehalem Creek. Stormwater runoff associated with the bridge is currently discharged directly from the bridge deck to the creek without treatment. The proposed bridge will be curbed and will divert stormwater runoff 6.2 m back to the vegetated roadside ditches. These ditches will be designed to minimize, retain, treat, and infiltrate stormwater onsite without causing flooding or erosion. ODOT has designed treatment facilities applicable to site conditions to remove debris, nutrients, sediments, and other pollutants likely to be present in the stormwater runoff.

1.3 Biological Information

The listing status and biological information for UWR steelhead are described in Busby *et al*. (1996) and NOAA Fisheries (1997). The listing status and biological information for UWR chinook salmon are described in Myers *et al*. (1998).

Freshwater habitat includes all waterways, substrates, and adjacent riparian areas [areas adjacent to a stream that provide shade, sediment, nutrient or chemical regulation, streambank stability, and input of large wood (LW) or organic matter] below longstanding, natural impassable barriers (*i.e.*, natural waterfalls in existence for at least several hundred years) and several dams that block access to former UWR steelhead and UWR chinook salmon habitat.

UWR steelhead are a late run winter steelhead. Hatchery fish are widespread throughout the region. Both summer steelhead and early-run winter steelhead have been introduced to the basin and escape to spawn naturally in substantial numbers. Winter steelhead are in steep decline after exhibiting wildly fluctuating abundance. Recent average adult abundance has been estimated at 3,000 fish. Natural fish adult returns in 1995 were the lowest in 30 years. Declines have been recorded in almost all natural populations. Natural steelhead integrity is at risk from introduced summer steelhead.

Upstream spawning migration of winter steelhead primarily begins in March and April, and peaks from April through June. Adult steelhead use the Willamette River as a migratory corridor and spawn in the upper reaches. Parr emerge from the gravel in late spring/early summer, rear in

the stream for one or two years, and outmigrate during spring run-off as smolts. UWR steelhead are not known to inhabit Chehalem Creek, however, according to ODFW the potential exists.

Adult spring chinook salmon require deep pools within reasonable proximity to spawning areas where they hold and mature for several months between migration and spawning. Preferred spawning and rearing areas have a low gradient (generally less than 3%), but adults often ascend much higher gradient reaches to find desirable spawning areas. UWR chinook utilize the lower reaches of Chehalem Creek primarily for rearing and migration (StreamNet 2003)

1.4 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations).

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed or proposed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action.

1.4.1 Biological Requirements

The first step NOAA Fisheries uses when applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list UWR steelhead and UWR chinook salmon for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for UWR steelhead and UWR chinook salmon to survive and recover to naturally-reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, spawning and rearing. UWR steelhead and UWR chinook salmon survival in the wild depends upon the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while at the same time removing adverse impacts of current practices. In conducting analyses of habitat-altering actions, NOAA Fisheries defines the biological requirements in terms of a concept called Properly Functioning Condition (PFC) and applies a "habitat approach" to its analysis (NOAA Fisheries 1999). The current status of the UWR steelhead and UWR chinook salmon, based upon their risk of extinction, has not significantly improved since the species were listed.

1.4.2 Environmental Baseline

The defined action area is the area that is directly and indirectly affected by the action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect affects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities include the immediate watershed containing the channel modification and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of Chehalem Creek extending upstream 15 m to the edge of disturbance, and downstream approximately 45 m below the bridge. Other reaches of Chehalem Creek or the Willamette River watershed are not expected to be directly or indirectly impacted.

Chehalem Creek is a tributary of the Willamette River. The project is located at the Chehalem Creek Bridge on Oregon Highway 240 at MP 9.66 and enters the Willamette River just south of the City of Newberg. Flows, substrates, and the gradient within the project action area are typical of lowland streams along the east slope of the Oregon Coast Range. The longitudinal gradient of Chehalem Creek within the action area is approximately 1 percent. The stream was stagnant at the bridge during an October 2002 site visit, with very little flow. The stream was braided, subsurface, and disconnected without signs of upstream or downstream movement.

The river substrates within the action area are predominantly composed of fine materials with some gravels and cobbles present. The streambed under the bridge also contains riprap from past streambank armoring activities. There are large pieces of concrete buried in the streambed under the bridge and are footings for the current and previous bridge structures at the site. There are active headcuts immediately downstream of the structure. The material is easily eroded alluvium, presenting a potential for head cutting, widening, and subsequent bridge instability issues.

The predominant land use within the project area is agriculture and rural residential. The majority of the floodplain has been cleared and converted to farmland or pastures. Within the action area, minimal native riparian vegetation exists. Within the immediate vicinity of the bridge, a very thin buffer of riparian vegetation exists on both banks of the creek upstream of the bridge. Riparian vegetation downstream of the bridge is virtually non-existent and is limited to pasture grasses and sporadic communities of reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus discolor*). Due to ongoing grazing, the action area downstream of the bridge is devoid of trees and shrubs. The dominant vegetation within the action area includes reed canarygrass, Himalayan blackberry, roses (*Rosa spp.*), Canada thistle (*Cirsium arvense*), snowberry (*Symphoricarpos albus*), timothy (*Phleum pratense*), vetch (*Vicia villosa*), and Oregon white oak (*Quercus garryana*).

Based on the best available information on the current range-wide status of UWR steelhead and UWR chinook salmon; the population status, trends, and genetics; and the poor environmental baseline conditions within the action area, NOAA Fisheries concludes that the biological requirements of the identified ESU within the action area are not currently being met. River basins have degraded habitat resulting from agricultural and forestry practices, water diversions, and urbanization. The following habitat indicators are either at risk or not properly functioning within the action area: Turbidity/sediment; chemical contamination/nutrients; LWD; substrate; pool quantity and quality; off-channel and refugia habitat; temperature; physical barriers; floodplain connectivity; streambank condition; change in peak/base flows; increase in drainage network; road density and location; riparian reserves and disturbance history. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of UWR steelhead.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

This effects analysis addresses effects to listed UWR steelhead and UWR chinook salmon that may result from this project given the conservation measures to be employed. These potential effects include reductions in water quality, changes in stream channel conditions and hydrology, and direct harm to fish.

Water Quality

The quality of the water that fish encounter on their migration is extremely important, and can determine such things as feeding and breeding success rates, disease levels, growth rates, and predation rates. Major elements of water quality critical to salmon are turbidity, suspended sediment, chemical contamination, and temperature. Turbidity and fine sediments can reduce prey detection, alter trophic levels, reduce substrate oxygen, smother redds, and damage gills, as well as cause other deleterious effects. Chemical contamination can reduce fecundity and fertility, increase disease, shift biotic communities, and reduce the overall health of migrating salmon. Temperature affects metabolic rates, resistance to disease, oxygen concentrations in the water, and other vital factors.

The effects of suspended sediment and turbidity on fish, as reported in the literature, range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

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Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al*. 1980, Birtwell *et al*. 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al*. 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al*. 1987). Turbidity resulting from the proposed project will be confined to the construction and removal of the temporary structures, the removal of bents from the existing bridges, and the placement of a single bent for the new bridges. The turbidity resulting from this in-water work will be limited in space and time.

Increases in suspended sediment and turbidity would be short-term and limited to activities associated with removal of the piles and excavation of the toe trench. Vegetation removal may reduce shade minimally, but NOAA Fisheries feels this will have minor temperature increases given the small area affected of Chehalem Creek**.** An erosion and sediment control plan and pollution control plan specifying containment measures would be developed to minimize water quality effects**.**

Stream Channel Conditions

Channel conditions and dynamics are influenced by a number of processes. Changes in impervious surface area and riprap are two common elements of transportation projects that directly affect channel condition and dynamics. Increased roadway area provides additional opportunities to collect and deliver lubricants, coolants and other pollutants released from automobiles. The increase in erosion can lead to simplification and channelization of the stream, while the reduced groundwater storage can alter the peak and base flows of the drainage. At this low position in the watershed these effects should be minor.

The in-water work proposed will also alter the substrate in the river where there are existing bents. The substrate will be disturbed when the bents are removed. In the long term, the

substrate will become more stable and even, due to the elimination of the bents in the river supporting the bridges.

Stream Basin Hydrology

The proposed bridge would have a hydraulic opening greater than the existing bridge, and the creek would not be constrained due to the single-span design. There would therefore be no scour or backwater effects. Additional impervious surfaces can alter the water quality, hydrology, and habitat complexity of a system. The reduction in infiltration capacity can result in an increase in peak and duration of flows during storm events, increased erosion, and reduced groundwater storage.

Harm and Harassment

Direct harm to fish species may occur as a result of fish removal from the work area and removal of the existing bridge deck and bent. The probability of harm is low because these activities would be conducted using containment measures, the work area would be isolated using a sandbag diversion, and silt fencing (a secondary measure) would be employed to minimize turbidity effects. In addition, all work requiring disturbance of the Chehalem Creek channel would be conducted beginning two weeks prior to the ODFW preferred in-water work period, when NOAA Fisheries feels fish presence is low. Within the isolated work area fish removal would occur. Isolation of the work area would have direct effects to ESA-listed UWR steelhead and UWR chinook salmon during the fish removal and relocation process. Mortality and/or injury to fish species may occur during handling. Potentially, delayed mortality could occur due to stress related to handling.

The proposed action, as described above in section 1.2, is to remove and replace an existing bridge on Chehalem Creek. The demolition and construction of a new bridge is expected to result in minimal disturbance of stream substrate, and therefore minimal displacement of any sediment which may be present in the stream substrate. Even though this substrate disturbance is expected to be minimal, some short-term turbidity may occur in Chehalem Creek. The short-term increase in turbidity could result in temporarily-reduced feeding efficiency for juvenile salmonids in the project area, and a short distance downstream.

The preferred in-water work period for Chehalem Creek is between July 1st and October 15th. They have requested an extension from ODFW and it was granted to work from June 15th to June 30th. Juvenile UWR steelhead and UWR chinook salmon occur in Chehalem Creek. However, NOAA Fisheries feels it is unlikely that ESA listed fish will be in the project area in high numbers during this period. NOAA Fisheries expects harm and harassment of juvenile UWR steelhead and UWR chinook salmon to be minimal, because the in-water work will be isolated from the stream.

1.5.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area has been defined as the streambed and streambank of Chehalem Creek extending upstream 15 m to the edge of disturbance, and downstream approximately 45 m below the bridge to the bottom of the project. A wide variety of actions occur within the Upper Willamette River watershed, within which the action area is located. NOAA Fisheries is not aware of any significant change in such non-Federal activities that are reasonably certain to occur. NOAA Fisheries assumes that future private and State actions will continue at similar intensities as in recent years. Future ODOT transportation projects are planned in the Upper Willamette River watershed. Each of these projects will be reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

1.6. Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of UWR steelhead or UWR chinook salmon. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NOAA Fisheries applied its evaluation methodology to the proposed action and found that it could cause slight, short-term degradation of anadromous salmonid habitat due to increases in sedimentation, turbidity, and temperature. Furthermore, NOAA Fisheries expects that construction related effects and work isolation activities could alter normal feeding and sheltering behavior of juvenile UWR steelhead or UWR chinook salmon should any be present in the action area during the proposed action. NOAA Fisheries expects some direct or delayed mortality of juvenile UWR steelhead or UWR chinook salmon as a result of fish rescue, salvage and relocation activities should any be present in the action area during the proposed action. However, NOAA Fisheries expects beneficial water quality and hydrologic effects from the attenuation of peak flows and increased potential base flow as a result of the stormwater treatment measures, and long-term beneficial effects of improved hydraulic conditions as a result the Chehalem Creek Bridge replacement.

NOAA Fisheries' conclusions are based on the following considerations: (1) Most of the proposed work will occur outside of the flowing waters of Chehalem Creek (*i.e.*, in the dry); (2) In-water work will be completed between June 15th and October 15th during a period of time which NOAA Fisheries expects presence of ESA-listed fish are low, minimizing the likelihood of UWR steelhead or UWR chinook salmon presence in the action area due to no flow, low flow, and/or warm water conditions; (3) any increases in sedimentation and turbidity in the project reach of the Chehalem Creek will be short-term and minor in scale, and would not change or worsen existing conditions for stream substrate in the action area; (4) long-term, beneficial effects will result from the increasing the hydraulic opening under the bridge by removing the existing piles and spanning Chehalem Creek; and (5) the proposed action is not likely to impair

properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to long-term survival and recovery at the population ESU scale. Stormwater will be routed to enable infiltration through existing vegetated ditches instead of directly from the bridge deck to the channel as the current bridge does.

1.7 Reinitiation of Consultation

This concludes formal consultation on the Chehalem Creek Bridge Replacement Project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. A Federal court has vacated the rule designating critical habitat for the ESUs considered in this opinion, however, if critical habitat is redesignated before this action is fully implemented, the analysis will be relevant when determining whether a reinitiation of consultation will be necessary.

2. INCIDENTAL TAKE STATEMENT

Section 4(d) and Section 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering (50 CFR 222.102; October 1, 2000). Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. An incidental take statement specifies the impact of any incidental taking of threatened species. If necessary, it also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1 Amount or Extent of Take

NOAA Fisheries anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of UWR steelhead and UWR chinook salmon because of detrimental effects from increased sediment levels (non-lethal), the potential for direct incidental take during the work area isolation, and delayed mortality due to handling during the fish removal process. Effects of actions such as the placement of rock in the channel and increased sediment levels are largely unquantifiable in the shortterm, and are not expected to be measurable as long-term harm to habitat features or by long-term harm to UWR steelhead and UWR chinook salmon behavior or population levels. Therefore, even though NOAA Fisheries expects some low-level incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take to the species itself. In instances such as these, the NOAA Fisheries designates the expected level of take as "unquantifiable." Based on the information in the BA, NOAA Fisheries anticipates that an unquantifiable amount of incidental take is reasonably certain to occur as a result of the actions covered by this Opinion.

In addition, NOAA Fisheries expects that the possibility exists for handling UWR steelhead and UWR chinook salmon during the work isolation process, which will result in incidental take to individuals during the construction period. NOAA Fisheries anticipates that incidental take of up to 60 juvenile UWR steelhead or UWR chinook salmon (57 non-lethal and 3 lethal) could occur as a result of the fish removal process due to dewatering and rewatering of the channel. This take estimate is based on approximately $60m^2$ of stream habitat that will be dewatered during work area isolation. The extent of the take is limited to UWR steelhead and UWR chinook salmon within the action area. The extent of the take includes the streambed and streambank of Chehalem Creek extending upstream to the edge of disturbance, and downstream approximately 60 m to the bottom of the project.

2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of UWR steelhead and UWR chinook salmon resulting from the action covered by this Opinion. The FHWA shall require measures that will:

1. Minimize the amount and extent of incidental take from rock placement and stabilization activities on the streambank of Chehalem Creek by requiring measures be taken to limit the duration and extent of rock placement in the action area, and to schedule such work when the fewest number of fish are expected to be present.

2. Minimize incidental take from general construction by excluding unauthorized permit actions and applying permit conditions that avoid or minimize adverse effects to riparian and aquatic systems.

3. Ensure effectiveness of implementation of the reasonable and prudent measures by requiring that all erosion control measures and plantings for site restoration, shall be monitored and evaluated both during and following construction.

2.3 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure #1 (rock placement, bank stabilization activities), the FHWA shall require completion of the following:

    a. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption. No end dumping will be allowed for bank stabilization.
    b. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site and be replaced with a functional equivalent.
    c. Where feasible, the bankline and riprap will be revegetated using natural vegetation (eg. willow stakes).

2. To implement Reasonable and Prudent Measure #2 (general conditions for construction, operation and maintenance), the FHWA shall ensure that:
    a. Timing of in-water work. In-water work will be completed between June 15th and October 15th during a period of time when presence of ESA-listed fish are low. Downstream fish passage will be maintained throughout the project, however, the stream will likely have nearly no flow during construction
    b. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
    c. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.[1]
    d. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.

[1] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

e. Pollution and Erosion Control Plan. A Pollution and Erosion Control Plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by FHWA or NOAA Fisheries.

i. Plan Contents. The Pollution and Erosion Control Plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

(1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

(2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.

(3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

(4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

(5) Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[2]

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows.

i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

[2] "Working adequately" means no turbidity plumes are evident during any part of the year.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4-feet per second.

iii. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 300 feet upstream of active spawning areas or areas with marine submerged vegetation.

g. Treated wood. Projects using treated wood[3] for any structure that may contact flowing water or that will be placed over water are not authorized, except for pilings installed following NOAA Fisheries' guidelines.[4] Projects that require removal of treated wood will use the following precautions.

i. Treated wood debris. Care must be taken to ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, it must be removed immediately.

ii. Removal of treated pilings. If treated wood pilings will be removed, the following conditions apply.

(1) Pilings must be dislodged with a vibratory hammer.

(2) Once loose, the pilings must be placed onto the construction barge or other appropriate dry storage location, and not left in the water or piled onto the stream bank.

(3) If pilings break during removal, the stump must be removed by breaking or cutting 3-feet below the sediment surface, then covered with a substrate appropriate for the site.

iii. Disposal of treated wood debris. All treated wood removed during a project must be disposed of at a facility approved for hazardous materials of this classification.

h. Preconstruction activity. Before significant[5] alteration of the project area, the following actions must be completed.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

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[3] "Treated wood" means lumber, pilings, and other wood products preserved with alkaline copper quaternary (ACQ), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), copper naphthenate, chromated copper arsenate (CCA), pentachlorophenol, or creosote.

[4] Letter from Steve Morris, National Marine Fisheries Service, to W.B. Paynter, Portland District, U.S. Army Corps of Engineers (December 9, 1998) (transmitting a document titled *Position Document for the Use of Treated Wood in Areas within Oregon Occupied by Endangered Species Act Proposed and Listed Anadromous Fish Species, National Marine Fisheries Service, December 1998*).

[5] "Significant" means an effect can be meaningfully measured, detected or evaluated.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[6]).

(2) An oil absorbing floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls must be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

i. Temporary access roads.

i. Existing ways. Existing roadways or travel paths must be used whenever possible, unless construction of a new way would result in less habitat take.

ii. Steep slopes. Temporary roads built mid-slope or on slopes steeper than 30 percent are not authorized.

iii. Minimizing soil disturbance and compaction. When a new temporary road is necessary within 150 feet[7] of a stream, water body or wetland, soil disturbance and compaction must be minimized by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NOAA Fisheries.

iv. Temporary stream crossings.

(1) The number of temporary stream crossings must be minimized.

(2) Temporary road crossings must be designed as follows.

(a) A survey must identify and map any potential spawning habitat within 300 feet downstream of a proposed crossing.

(b) No stream crossing may occur at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning areas may be affected.

(c) The crossing design must provide for foreseeable risks (*e.g.*, flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.

(d) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

v. Obliteration. When the project is completed, all temporary access roads must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.

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[6] When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

[7] Distances from a stream or water body are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. "Channel migration zone" means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years, *e.g.*, alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams.

j. Heavy Equipment. Use of heavy equipment will be restricted as follows.

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally sized, rubber tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained and stored as follows.

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any stream, water body or wetland.

(2) All vehicles operated within 150 feet of any stream, water body or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by FHWA or NOAA Fisheries.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

iii. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, water body or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.

k. Site preparation. Native materials will be conserved for site restoration.

i. If possible, native materials must be left where they are found.

ii. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood[8], native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

l. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 300 feet upstream of spawning habitats.

m. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

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[8] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

i. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.

ii. If electrofishing equipment is used to capture fish, the capture team must comply with NOAA Fisheries' electrofishing guidelines.[9]

iii. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

iv. Captured fish must be released as near as possible to capture sites.

v. ESA-listed fish may not be transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

vii. NOAA Fisheries or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

n. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.

i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.

ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

o. Construction of new impervious surface/stormwater management. Beyond construction terms and conditions above, any project that will produce new impervious surface or a land cover conversion that slows the entry of water into the soil must also control the quantity and quality of the resulting stormwater runoff for the life of the project.

i. On-site stormwater management.

[9] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

(1) Stormwater best management practices (BMPs)[10] will be used for stormwater source control and treatment individually or in a series as necessary to minimize, retain, treat, and infiltrate stormwater on-site to the maximum extent feasible without causing flooding or erosion effects. Stormwater BMP installation in the riparian buffer area may be allowed with prior written approval from NOAA Fisheries. (Actions with no more than a negligible likelihood of adverse effects.)

(2) Permeable pavements[11] must be installed and maintained for load-bearing surfaces, including multiple use trails, wherever soil, slope and traffic conditions allow.

ii. Runoff treatment facilities.[12]

(1) Water quality treatment must be provided to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present using the best available technology applicable to site conditions.[13]

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[10] For purposes of this Opinion, "stormwater BMP" means a procedure or structure that, when used individually or in series, will avoid or minimize the adverse effects of stormwater on riparian and aquatic habitats. On-site stormwater BMPs include source controls to prevent the production and release of pollutants, and treatments that capture pollutants. A source control can be operational (*i.e.*, managerial) or structural (*i.e.*, a physical or mechanical facility). **Implement appropriate** on-site BMPs such as downspout dispersion, concentrated flow dispersion , sheet flow dispersion, full dispersion , concave vegetated surfaces, multiple small basins, engineered soil/landscape system, infiltration basins, infiltration trenches, bio-filtration swales, basic biofiltration swales, wet biofiltration swales, continuous inflow biofiltration swales, basic filter strips , narrow area filter strips, wetponds, and stormwater treatment wetlands. For a discussion of stormwater BMPs, see, *e.g.*, Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html

[11] **Implement appropriate** permeable pavements such as porous asphalt and porous concrete, porous pavers, and permeable interlocking concrete pavement. For a discussion of stormwater BMPs, see, *e.g.*, Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html).

[12] **Implement appropriate** water quality treatment facilities such as biofiltration swales, constructed wetlands, detention ponds, or oil/water separators. For a discussion of treatment facilities see, *e.g.*, Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html).

[13] In addition to on-site stormwater BMP's, in Washington State, runoff treatment facilities are required if a project has 5,000 or more square feet of effective, pollution-generating impervious surfaces, or 32,670 or more square feet (0.75 acres) of pollution-generating pervious surfaces and a surface discharge. Further, treatment facilities must be sized to meet runoff volume predicted from a 24-hour storm with a 6-month return frequency as predicted by a continuous runoff model. The water quality design flow rate must treat 91 percent of the runoff volume. Also in Washington State, projects that discharge directly into the Columbia River are exempt from flow control requirements, but must meet requirements iii.1-4 above).

(2) Treatment facilities and BMPs will not be installed inside the riparian buffer area without prior written approval from NOAA Fisheries. (Actions with no more than a negligible likelihood of adverse effects.)

(3) Runoff from pollution generating impervious surfaces must be pre-treated[14] to reduce suspended solids before use of infiltration BMPs.

(4) Stormwater treatment facilities and BMPs for each project will include a schedule of operation, inspection and maintenance activities for all structural BMPs and conveyance systems. A log of maintenance activities showing what actions were taken will be kept and made available for inspection on request by the FHWA and NOAA Fisheries. These operations, inspection and maintenance activities must be conducted, as appropriate:

(a) Ensure that the capacity of each facility, structural BMP and conveyance system is not exceeded and that heavy sediment discharges are prevented.

(b) Inspect and clean each structural BMP and conveyance system as needed. Determine whether improvements in operation and maintenance are needed.

(c) Promptly repair any deterioration threatening the effectiveness of any structural BMP or conveyance system.

(d) If storm drains inlets are used, post warning signs on or next to all storm drain inlets that say, as appropriate for the receiving water, "Dump No Waste - Drains to Ground Water, Streams, or Lakes."

(e) Ensure that all sediments and liquids from catch basins are disposed of only in an approved facility.

iii. Flow Control. When runoff must be discharged directly, or indirectly through a conveyance system, into fresh surface water or a wetland, the following requirements apply.

(1) Natural drainage patterns must be maintained. Discharges from the project site must occur at the natural location, to the maximum feasible extent. Discharge of runoff from the project site must not cause an adverse effect to riparian or aquatic habitats.

(2) The area must be drained by a conveyance system comprised entirely of manufactured elements (*e.g.*, pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.

[14] **Implement appropriate** pretreatment BMPs such as pre-settling basins.

(3) Any erodible elements of this system must be adequately stabilized to prevent erosion.

(4) Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect to wetland hydrology, soils or vegetation.

p. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows.

i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

ii. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.

iii. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.

v. Fertilizer. No surface application of fertilizer may occur within 50-feet of any stream channel.

vi. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

q. Long-term adverse effects. Long-term adverse effects will be avoided or offset after taking all appropriate steps to avoid or minimize short-term adverse effects.

i. Actions of concern. The following actions require compensation for long-term adverse effects.

(1) Construction of new impervious surfaces inside the riparian buffer area.[15]

(2) Maintenance dredging in water closer than 50-feet from shore or in waters less than 20-feet deep.[16]

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[15] For purposes of this Opinion only, "riparian buffer area" means land: (1)Within 150 feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100-feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50-feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. "Natural water" means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

[16] Depth in tidal waters is measured from mean lower low water (MLLW).

(3) Other activities that prevent development of properly functioning condition of natural habitat processes.

ii. Design review. The FHWA must review and approve designs to avoid or offset long-term adverse effects by applying the following considerations.
(1) Use of an ecosystem approach
(2) Habitat requirements of the affected species
(3) Productive capacity of the proposed construction and compensation site(s)
(4) Timing of the construction and compensation actions
(5) Length of time necessary to achieve full functionality
(6) Likelihood of success

iii. Maintenance dredging goal. The goal of compensation for maintenance dredging is to offset loss of benthic food resources and must consist of riparian plantings of trees and woody shrubs or restoration of nearshore habitats whenever feasible.

iv. Project evaluation. The FHWA must evaluate compensation project success using quantitative criteria established for the project.

v. Terms and conditions. Action to minimize long-term adverse effects that requires a FHWA permit must also meet all applicable terms and conditions for this Opinion, or complete a separate consultation.

3. To implement Reasonable and Prudent Measure #2 (monitoring and reporting), the FHWA shall ensure that:

a. Within 120 days of completing the project, the FHWA shall ensure submital of a monitoring report to NOAA Fisheries describing the FHWA's success meeting their permit conditions. This report will consist of the following information.

i. Project identification.
(1) Project name;
(2) starting and ending dates of work completed for this project;
(3) the FHWA contact person; and,

ii. Isolation of in-water work area. All projects involving isolation of in-water work areas must include a report of any seine and release activity including:
(1) The name and address of the supervisory fish biologist;
(2) methods used to isolate the work area and minimize disturbances to fish species;
(3) stream conditions prior to and following placement and removal of barriers;
(4) the means of fish removal;
(5) the number of fish removed by species;
(6) the location and condition of all fish released; and
(7) any incidence of observed injury or mortality.

iii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iv. Site restoration. Documentation of the following conditions:
   (1) Finished grade slopes and elevations.
   (2) Log and rock structure elevations, orientation, and anchoring, if any.
   (3) Any changes in planting composition and density.
   (4) A plan to inspect and, if necessary, replace failed plantings and structures, including the compensatory mitigation site.

v. Photographic documentation of environmental conditions at the project site before, during and after project completion.
   (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
   (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
   (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

vi. Monitoring. On an annual basis, for 5 years after completing the project, the FHWA shall ensure submital of a monitoring report to NOAA Fisheries describing the FHWA's success in meeting their habitat restoration goals of any riparian plantings. This report will consist of the following information:
   i. Project identification.
      (1) Project name,
      (2) starting and ending dates of work completed for this project, and
      (3) the FHWA contact person.

   ii. Riparian restoration. Documentation of the following conditions:
      (1) Any changes in planting composition and density.
      (2) A plan to inspect and, if necessary, replace failed plantings and structures.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed actions may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NOAA Fisheries shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH

consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for Federally-managed fisheries within the waters of Washington, Oregon, and California. Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years)(PFMC 1999).

Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*)(PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed action is detailed above in Part 1.2. The action area for this consultation includes the streambed and streambank of Chehalem Creek extending upstream 15 m to the edge of disturbance, and downstream approximately 45 m below the bridge to the bottom of the project. This area has been designated as EFH for chinook salmon.

3.5 Effects of Proposed Action

NOAA Fisheries believes the implementation of the bridge replacement project is likely to adversely affect EFH for chinook salmon. Information submitted by the FHWA in its request for consultation and additional information provided by ODFW is sufficient for NOAA Fisheries to conclude that the effects of the proposed action are transient, local, and of low intensity and are likely to adversely EFH in the short term, however over the long term provide a larger hydraulic opening under the bridge, riparian growth, and more adequate treatment of stormwater will benefit UWR chinook salmon. NOAA Fisheries also believes that replacement of the bridge will

provide a beneficial effect and the conservation measures proposed as an integral part of the action would avoid, minimize, or otherwise offset potential adverse impacts to designated EFH.

3.6 Conclusion

NOAA Fisheries believes that implementation of the bridge replacement project in Chehalem Creek is likely to adversely affect designated EFH for chinook salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project in the BA by the FHWA, all of the Reasonable and Prudent Measures and the Terms and Conditions contained in Sections 2.3 (Numbers 1 and 2) are applicable to EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

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